

AMENDMENTS

In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A molding die for molding glass, comprising:
a substrate;
a first intermediate layer of Ni-containing Ir-Re alloy overlying the substrate, with Ni concentration decreasing with distance from the substrate/first intermediate layer interface;
a second intermediate layer of metal-containing Ir-Re alloy overlying the first intermediate layer, the metal comprising selected from a group consisting of Cr, Ta, Ti, ~~or~~ and Ti-Cr alloy, in concentration increasing with distance from the first intermediate layer/second intermediate layer interface; and
a passivation film overlying the second intermediate layer.
2. (Original) The molding die as claimed in claim 1, wherein the substrate comprises tungsten carbide.
3. (Original) The molding die as claimed in claim 1, wherein maximum Ni concentration of the first intermediate layer is between 20 and 30 at%.

4. (Original) The molding die as claimed in claim 1, wherein minimum Ni concentration of the first intermediate layer is between 5 and 10 at%.

5. (Original) The molding die as claimed in claim 1, wherein atomic ratio of Ir to Re of the first intermediate layer is between 99 to 1 and 70 to 30.

6. (Original) The molding die as claimed in claim 1, wherein atomic ratio of Ir to Re of the first intermediate layer is between 99 to 1 and 90 to 10.

7. (Original) The molding die as claimed in claim 1, wherein the thickness of first intermediate layer is about 0.1 to 0.3 μ m.

8. (Original) The molding die as claimed in claim 1, wherein maximum Cr concentration of the second intermediate layer is between 40 and 50 at%.

9. (Original) The molding die as claimed in claim 1, wherein Cr concentration of the second intermediate layer is at least higher than 0 at%.

10. (Original) The molding die as claimed in claim 1, wherein maximum Ta concentration of the second intermediate layer is between 20 and 25 at%.

11. (Original) The molding die as claimed in claim 1, wherein Ta concentration of the second intermediate layer is at least higher than 0 at%.

12. (Currently amended) The molding die as claimed in claim 1, wherein maximum Ti concentration of the second intermediate layer is between 20 and 25 at%.

13. (Original) The molding die as claimed in claim 1, wherein Ti concentration of the second intermediate layer is at least higher than 0 at%.

14. (Original) The molding die as claimed in claim 1, wherein maximum Ti-Cr alloy concentration of the second intermediate layer is between 30 and 38 at%.

15. (Original) The molding die as claimed in claim 1, wherein Ti-Cr alloy concentration of the second intermediate layer is at least higher than 0 at%.

16. (Original) The molding die as claimed in claim 1, wherein atomic ratio of Ir to Re of the second intermediate layer is between 99 to 1 and 70 to 30.

17. (Original) The molding die as claimed in claim 1, wherein atomic ratio of Ir to Re of the second intermediate layer is between 99 to 1 and 90 to 10.

18. (Original) The molding die as claimed in claim 1, wherein the thickness of second intermediate layer is about 0.1 to 0.3 μ m.

19. (Original) The molding die as claimed in claim 1, wherein the passivation film comprises nitride-containing Ir-Re alloy.

20. (Original) The molding die as claimed in claim 19, wherein atomic ratio of Ir to Re of the passivation film is between 99 to 1 and 70 to 30.

21. (Original) The molding die as claimed in claim 19, wherein atomic ratio of Ir to Re of the passivation film is between 99 to 1 and 90 to 10.

22. (Original) The molding die as claimed in claim 1, wherein the thickness of passivation film is about 0.5 to 2 μ m.

23. (Original) The molding die as claimed in claim 19, wherein the nitride is chromium nitride, tantalum nitride, titanium nitride, or titanium chromium nitride.

24. (Original) The molding die as claimed in claim 23, wherein the nitride is chromium nitride when the metal is Cr.

25. (Original) The molding die as claimed in claim 23, wherein the nitride is tantalum nitride when the metal is Ta.

26. (Original) The molding die as claimed in claim 23, wherein the nitride is titanium nitride when the metal is Ti.

27. (Original) The molding die as claimed in claim 23, wherein the nitride is titanium chromium nitride when the metal is Ti-Cr alloy.

28. (Original) The molding die as claimed in claim 1, wherein the passivation film comprises a molding surface.

29. (Currently amended) A molding die for molding glass, comprising:

a substrate;

a first intermediate layer of Ni-containing Ir-Re alloy overlying the substrate, with Ni concentration decreasing with distance from the substrate/first intermediate layer interface;

an intermediate buffer layer of Ir-Re alloy overlying the substrate;

a second intermediate layer of metal-containing Ir-Re alloy overlying the intermediate buffer layer, the metal ~~comprising~~ selected from a group consisting of Cr, Ta, Ti, or and Ti-Cr alloy, in concentration increasing with distance from the intermediate buffer layer/second intermediate layer interface; and

a passivation film overlying the second intermediate layer.

30. (Original) The molding die as claimed in claim 29, wherein the substrate is tungsten carbide.

31. (Original) The molding die as claimed in claim 29, wherein maximum Ni concentration of the first intermediate layer is between 20 and 30 at%.

32. (Original) The molding die as claimed in claim 29, wherein minimum Ni concentration of the first intermediate layer is between 5 and 10 at%.

33. (Original) The molding die as claimed in claim 29, wherein atomic ratio of Ir to Re of the first intermediate layer is between 99 to 1 and 70 to 30.

34. (Original) The molding die as claimed in claim 29, wherein atomic ratio of Ir to Re of the first intermediate layer is between 99 to 1 and 90 to 10.

35. (Original) The molding die as claimed in claim 29, wherein the thickness of first intermediate layer is about 0.1 to 0.3 μ m.

36. (Original) The molding die as claimed in claim 29, wherein maximum Cr concentration of the second intermediate layer is between 40 and 50 at%.

37. (Original) The molding die as claimed in claim 29, wherein Cr concentration of the second intermediate layer is at least higher than 0 at%.

38. (Original) The molding die as claimed in claim 29, wherein maximum Ta concentration of the second intermediate layer is between 20 and 25 at%.

39. (Original) The molding die as claimed in claim 29, wherein Ta concentration of the second intermediate layer is at least higher than 0 at%.

40. (Original) The molding die as claimed in claim 29, wherein maximum Ti concentration of the second intermediate layer is between 20 and 25 at%.

41. (Original) The molding die as claimed in claim 29, wherein Ti concentration of the second intermediate layer is at least higher than 0 at%.

42. (Original) The molding die as claimed in claim 29, wherein maximum Ti-Cr alloy concentration of the second intermediate layer is between 30 and 38 at%.

43. (Original) The molding die as claimed in claim 29, wherein Ti-Cr alloy concentration of the second intermediate layer is at least higher than 0 at%.

44. (Original) The molding die as claimed in claim 29, wherein atomic ratio of Ir to Re of the second intermediate layer is between 99 to 1 and 70 to 30.

45. (Original) The molding die as claimed in claim 29, wherein atomic ratio of Ir to Re of the second intermediate layer is between 99 to 1 and 90 to 10.

46. (Original) The molding die as claimed in claim 29, wherein the thickness second intermediate layer is about 0.1 to 0.3 μ m.

47. (Original) The molding die as claimed in claim 29, wherein atomic ratio of Ir to Re of the intermediate buffer layer is between 99 to 1 and 70 to 30.

48. (Original) The molding die as claimed in claim 29, wherein atomic ratio of Ir to Re of the intermediate buffer layer is between 99 to 1 and 90 to 10.

49. (Original) The molding die as claimed in claim 29, wherein the thickness of intermediate buffer layer is about 0.01 to 0.1 μ m.

50. (Original) The molding die as claimed in claim 29, wherein the passivation film is nitride-containing Ir-Re alloy.

51. (Original) The molding die as claimed in claim 50, wherein atomic ratio of Ir to Re of the passivation film is between 99 to 1 and 70 to 30.

52. (Original) The molding die as claimed in claim 50, wherein atomic ratio of Ir to Re of the passivation film is between 99 to 1 and 90 to 10.

53. (Original) The molding die as claimed in claim 29, wherein the thickness of passivation film is about 0.5 to 2 μ m.

54. (Original) The molding die as claimed in claim 50, wherein the nitride is chromium nitride, tantalum nitride, titanium nitride, or titanium chromium nitride.

55. (Original) The molding die as claimed in claim 54, wherein the nitride is chromium nitride when the metal is Cr.

56. (Original) The molding die as claimed in claim 54, wherein the nitride is tantalum nitride when the metal is Ta.

57. (Original) The molding die as claimed in claim 54, wherein the nitride is titanium nitride when the metal is Ti.

58. (Original) The molding die as claimed in claim 54, wherein the nitride is titanium chromium nitride when the metal is Ti-Cr alloy.

59. (Original) The molding die as claimed in claim 29, wherein the passivation film comprises a molding surface.